REMARKS

Claims 1-14, 23, 25-35 and 40-51 were presented for examination. All claims were rejected based on 35 U.S.C. § 101. Applicant respectfully requests that all rejections be withdrawn in light of the following:

Response to 35 U.S.C. § 101 Rejections

Claim 1 has been amended by explicitly specifying that the seismic traces are obtained by seismic receivers. Because seismic receivers gather data based on actual physical measurements, the seismic traces that are processed are always representative of actual physically sensed data and cannot be data that are created mathematically. Therefore, in light of amended claim 1, a rejection based on 35 U.S.C. § 101 is inappropriate and this Office should remove its rejections to Applicant's claims.

Discussion of Bilski

In accordance with recent decision *in re Bernard Bilski*, claims directed to a process that transforms a particular article into a different step or thing, are "*surely patent eligible*" because such claims would not pre-empt all other uses. It is affirmed by the CAFC in decision *in re Bernard L. Bilski*, that a controlling factor of the "*machine or transformation*" test concerns the nature of the data that are processed (cf. page 25 § 2 page 26). In particular, the Court holds that a process is patent eligible if the data represent physical and tangible objects.

Application of Bilski to Applicant's Claims

Amended claim 1 relates to a method processing seismic traces recorded by seismic receivers (such as hydrophone or geophone), the method comprising various steps to be performed for the determination of velocity V and anellipticity η parameters, said parameters being converted into velocity V(t0) and anellepticity η(t0) laws for processing the seismic traces. For the

determination of patent eligibility of amended claim 1 in light of *Bilski*, the following elements are relevant and must be given due consideration.

As explicitly mentioned in new claim 1 the input data which are processed are seismic traces obtained from seismic receivers. Seismic traces are obtained by propagating seismic waves through the subsurface by means of seismic sources and picking up by means of seismic sensors, signals resulting from reflections of such seismic waves by the subsurface in the area being explored (see § [0003] of US2006/0291330). The signals produced by the sensors typically include in addition to the reflections which will be used for producing seismic images of the subsurface area, undesirable components such as multiple reflections, so called ghosts in marine acquisition, and/or the result of other interactions between the propagations of seismic waves and the subsurface area. In addition, signals produced by the sensors contain various kinds of noises, some originated in the physical or electronic features of the sensors, some extraneous: e.g. environmental. Hence seismic traces comprising signals as recorded cannot be equated to abstract, numerical data. Seismic traces thus obtained relate to this specific subsurface area and bear information about the geometry and properties (that is the geology) of this subsurface area.

Seismic traces are produced by physical sensors, and represent physical, tangible objects since they contain information relating to the area of the subsurface through which the seismic waves have propagated. They indisputably meet the condition set out in *Bilski*, as discussed above. Data derived from such signals by applying processing steps retain the "*physical content*" of the signals produced by sensors and their characters are being representative of the same subsurface area i.e. of physical and tangible objects. Such data obtained by processing cannot be equated to abstract, numerical data.

Amended claim 1 explicitly specifies:

- the nature of the input data which are processed ("*seismic traces*") and
- how said input data are obtained (the seismic traces are recorded by seismic receivers).

Consequently, the input data which are processed are physical signals representative of physical and tangible objects.

Furthermore the output data of amended claim 1 are processed seismic traces. Output data derived from physical signals (i.e. seismic traces) by applying processing steps retain the "*physical content*" of the signals produced by receivers and their characters are being representative of the same subsurface area i.e. of physical, tangible objects. Such output data obtained by processing cannot be equated to abstract, numerical data. A method which processes "*physical*" signals representative of physical and tangible objects produces other "*physical*" signals representative of physical and tangible objects.

In the case of amended claim 1, the output data are processed seismic traces. Hence the output data of the method defined in amended claim 1 cannot be equated to abstract numerical data. Consequently, the output data obtained with the method of amended claim 1 are physical signals representative of physical and tangible objects.

A processing method which starts from seismic data in a certain state and produces data in another state is a method which processes "*physical*" signals representative of physical and tangible objects to produce other "*physical*" signals representative of physical and tangible objects. With reference to the rationale set out in *Bilski*, such a method cannot be characterized as pre-empting "*other uses*" for the sequence of processing steps recited in the claim since it does not apply to unspecified data. In contrast, it is defined with reference to seismic data recorded by seismic sensors and has meaning only to the extent it applies to seismic data.

The same remarks apply to claims 2-14, 23, 25-35 and 40-51. Consequently, it is considered that claims of this application satisfy 35 U.S.C. § 101.

The foregoing remarks are intended to assist the Office in examining the application and in the course of explanation may employ shortened or more specific or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims; the actual claim language should be considered in each case. Furthermore, the remarks are not to be considered to be exhaustive of the facets of the invention which are rendered patentable, being only examples of certain advantageous features and difference which Applicant's attorney chooses to mention at this time.

Applicant respectfully submits that all issues have been adequately addressed, that all claims are allowable, and that the case should be advanced to issuance.

If you have any questions, please feel free to contact me.

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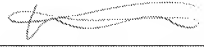
Respectfully submitted,



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